FEASIBILITY STUDY

FS-0611A

Upgrade US 21 from SR 1100 (Oklahoma Road) in Alleghany County to SR 1900 (Old Railroad Grade Road) in Wilkes County

Alleghany/Wilkes County

Division 11

Prepared by the
Program Development Branch
N. C. Department of Transportation

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11/17/08
Date

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I. General Description

This feasibility study describes the widening of US 21 from SR 1100 in Alleghany County to SR 1900 in Wilkes County, approximately 4.8 miles. The existing alignment will be utilized and the project location is shown on Figures 1 and 2. Two different alternatives were investigated and the associated costs with the breakdowns are described below:

ALTERNATE 1. Three-lane shoulder section with 12-foot travel lanes and 2-foot paved shoulders within the existing right of way. The third lane will serve as climbing, passing or turning lane based on needs of specific area.

ALTERNATE 2. Upgraded two-lane shoulder section 12-foot travel lanes with 2-foot paved shoulders and within the existing right of way. This alternative retains the existing climbing, passing and turning lanes.

This study is the initial step in the planning and design process for this project and is not to be considered the product of exhaustive environmental or design investigations. The purpose of the study is to describe the problem, recommend a treatment including costs, and identify potential problem areas that deserve consideration in the planning and design phases.

II. Background

The primary purpose of this project is to improve the traffic safety and operations along US 21 by upgrading the existing lane widths and shoulders to the greatest extent possible. In addition, this project will also improve the access between Alleghany and Wilkes County.

This section of US 21 is designated as a minor arterial in the North Carolina Statewide Functional Classification System. The land immediately surrounding the project area is primarily wooded and mountainous. The project corridor has widely scattered residential development and some agricultural tracts.

Currently, US 21 is a two-lane roadway with 23-feet of pavement, and minimal shoulders. The posted speed varies between 35 MPH to 55 MPH. Additional widening currently exist at some locations in order to accommodate the climbing, passing and/or turning lanes.

At the northern end, adjacent to this project, planning and design for TIP project R-3101 is underway. This is the reconstruction of US 21 from Roaring Gap to Sparta and is scheduled to be let for construction in October 2009.

This project is supported by the High Country RPO and the Alleghany County Board of Commissioners.

III. Traffic and Safety

The current year (2008) Average Daily Traffic (ADT) within the project limits ranges between 3100 vehicles per day (vpd) at the south end of the project to 3300 vehicles per day (vpd) at the north end. For the design year 2035, the estimated traffic volumes within the project limits ranges from 5700 vehicles per day (vpd) at the south end of the project to 6500 vpd at the north end. Truck traffic is estimated to make up 8% of the ADT traffic.

Currently, this section of US 21 is operating at Level of Service (LOS) "C". If no improvements are made, the section will operate at LOS "D" in the design year 2035. However, with the proposed upgrade of the facility, this section of the roadway is expected to operate at LOS "C".

During the three year period from July 2004 to June 2007, there were thirty (30) accidents reported within the project limits. Thirteen (13) of these crashes were fixed object accidents, 7 were overturn/rollover accidents, 2 were rear end; slow or stop, 2 animal accidents and 1 fatality. The accident rate for this 4.8 mile portion of roadway was 227.84 accidents per 100 million vehicle miles of travel (acc/100mvm), which was slightly higher than the 2004-2007 statewide rate of 186.99 accidents/100 mvm.

The most prevalent accident types along this corridor are as follows: Approximately 43 percent of accidents were fixed object, 23 percent were overturn/rollover, 7 percent were rear end; slow or stop, 7 percent were with animals. Individually, all other accident types are approximately twenty (20) percent or less of total accidents. Improvements to upgrade this section of roadway should reduce the likelihood of some of these types of accidents.

IV. Description of Alternatives

ALTERNATE 1. Three-lane shoulder section with 12-foot lanes, 2-foot paved shoulders within the existing right-of-way. The third lane will serve as either a climbing, passing or turning lane. The proposed widening is symmetrical along existing US 21 and the length of this alternative is approximately 4.8 miles.

With this alternative, it is anticipated there will be zero business and zero residences relocated due to this improvement because the existing right of way is anticipated to be sufficient. The total cost of the alternative, including construction and utility relocation is estimated to be $19,000,000.

Construction.....	$18,800,000
Right-of-Way.....	$0
Utility Relocation.....	$200,000
Total Project Cost (Alternative #1).....	$19,000,000

ALTERNATE 2. Two-lane shoulder section with 12-foot lanes, 2-foot paved shoulders within the existing right-of-way. The proposed widening is symmetrical along existing US 21 and the length of this alternative is approximately 4.8 miles.

With this alternative, it is also anticipated there will be zero business and zero residences relocated due to this improvement because the existing right of way is anticipated to be sufficient. The total cost of the alternative, including construction and utility relocation is estimated to be $9,600,000.

Construction.....	$9,400,000
Right-of-Way.....	$0
Utility Relocation.....	$200,000
Total Project Cost (Alternative #2).....	$9,600,000

V. Community Issues

It should be noted that William T. Vogler Cottage, a landmark site on the National Historic Register, is located approximately ½ mile southeast of SR 1100 and US 21 intersection. However, no direct impact to this historic property is anticipated as a result of this project.

VI. Natural Environment Issues

According to the National Heritage Program GIS data base, there is one Threatened or Endangered species, Dendroica Cerulean (Cerulean Warbler) that may potentially exist in the immediate project area.

VII. Recommendations

The first option proposes upgrading US 21 from the existing narrowed two-lane roadway to a three-lane section with 12-foot travel lanes and 2-foot paved shoulders. The second option also proposes to upgrade the existing narrowed two-lane roadway to an improved two lane section with 12-foot travel lanes and 2-foot paved shoulders.

Our analysis shows that either of the alternatives would operate at a LOS "C" or better through the 2035 design year. Alternate #1 (three lane section) is estimated to cost $9.4 million more for similar operations, therefore, Alternate #2 is the recommended alternative at this time.

VIII. Additional Comments

No special accommodation for sidewalks and/or bicycles is recommended on this project.

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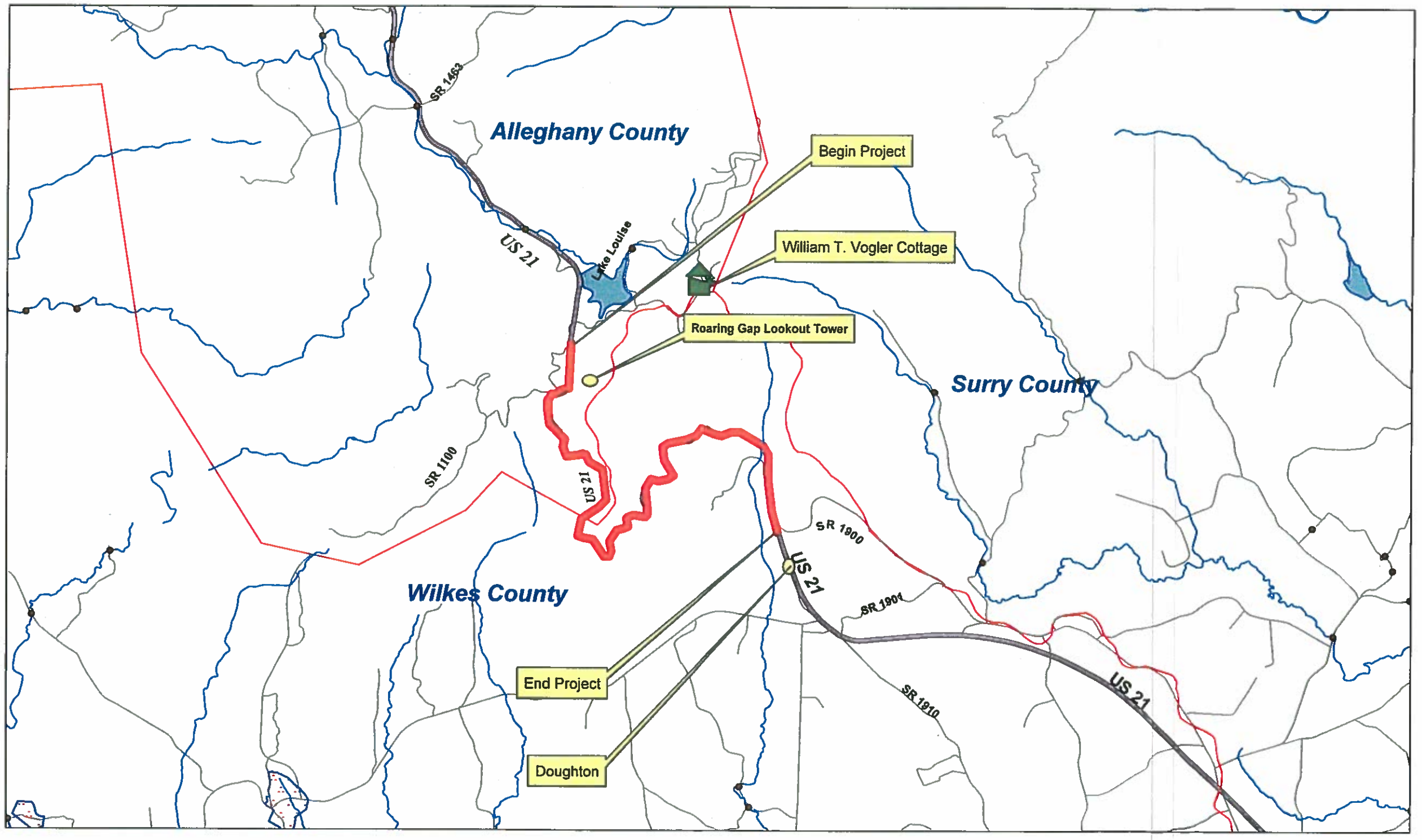
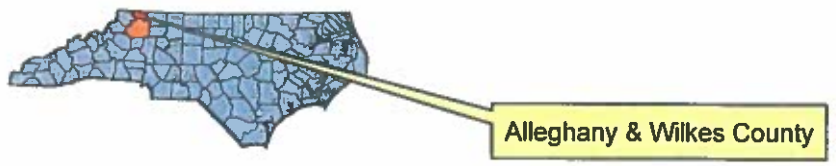
Figure 1





0 0.5 1 2 3 4 Miles

Project Limits

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Figure 2